



TRANSMITTAL OF APPEAL BRIEF

Docket No.
20459-00346-US1

In re Application of: Per Sjoberg

Application No.
10/772,246-Conf. #6881

Filing Date
February 6, 2004

Examiner
A. B. Felton

Group Art Unit
3641

Invention: GAS-GENERATING MATERIAL FOR GAS-ACTUATED CAR SAFETY DEVICES

TO THE COMMISSIONER OF PATENTS:

Transmitted herewith is the Appeal Brief in this application, with respect to the Notice of Appeal filed: February 8, 2005.

The fee for filing this Appeal Brief is \$ 500.00.

☒ Large Entity ☐ Small Entity

☐ A petition for extension of time is also enclosed.


The fee for the extension of time is _____.

☐ A check in the amount of _____ is enclosed.

☒ Charge the amount of the fee to Deposit Account No. 22-0185.
This sheet is submitted in duplicate.

☐ Payment by credit card. Form PTO-2038 is attached.

☒ The Director is hereby authorized to charge any additional fees that may be required or credit any overpayment to Deposit Account No. 22-0185.
This sheet is submitted in duplicate.


Joseph Barrera
Attorney Reg. No. : 44,522
CONNOLLY BOVE LODGE & HUTZ LLP
1990 M Street, N.W., Suite 800
Washington, DC 20036-3425
(202) 331-7111

Dated: February 23, 2005

I hereby certify that this correspondence is being facsimile transmitted to the Patent and Trademark Office, facsimile no. (703) 872-9306, on the date shown below.

Dated: 2-23-05

Signature:  (Downetta Teagle)



DOCKET NO.: 20459-00346-US1
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
PER SJOBERG

Application No.: 10/772,246

Confirmation No.: 6881

Filed: February 6, 2004

Art Unit: 3641

For: GAS-GENERATING MATERIAL FOR GAS-
ACTUATED CAR SAFETY DEVICES

Examiner: A. B. Felton

MS Appeal Brief – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF

Joseph Barrera, Reg. No. 44,522
CONNOLLY BOVE LODGE & HUTZ LLP
1990 M Street, N.W., Suite 800
Washington, DC 20036-3425
(202) 331-7111
(202) 293-6229 (Fax)
Attorney for Applicant

02/24/2005 SZEWDIE1 00000128 220185 10772246

01 FC:1402 500.00 DA



TABLE OF CONTENTS

	PAGE
I. REAL PARTY IN INTEREST	3
II. RELATED APPEALS AND INTERFERENCES.....	3
III. STATUS OF CLAIMS	3
A. Current Status of Claims.....	3
B. Claims On Appeal:.....	3
IV. STATUS OF AMENDMENTS	4
V. SUMMARY OF CLAIMED SUBJECT MATTER	4
VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL	5
A. Claims 8-22 stand rejected under 35 U.S.C. § 103 as obvious over the combined teachings of Blomquist (U.S. Pat. No. 6,004,410) and Langlet (WO 98/55428).	5
VII. ARGUMENTS.....	5
A. The Cited Art and the Examiner's Rejection.....	5
B. The Examiner's Rejection is Contrary to the Law Of Obviousness.....	7
(i) The Examiner bears the burden of establishing a case of <i>prima</i> <i>facie</i> obviousness.	8
(ii) The fact that GDN and GUD are per se old is insufficient to establish <i>prima facie</i> obviousness.....	10
(iii) The rationale of <i>In re Geiger</i> and not <i>In re Kerkoven</i> is controlling.	12
C. The Examiner's Reliance on <i>Crockett</i> and <i>Pinten</i> is Misplaced	14
D. The Application Includes Experimental Data That Demonstrates Unexpected Properties For The Claimed Compositions.....	17
E. The Examiner improperly rejected claims 9, 10 and 22 as being <i>prima</i> <i>facie</i> obvious over Blomquist in view of Langlet under 35 U.S.C. §103(a).	19

F.	Conclusion	19
VIII.	CLAIMS INVOLVED IN THE APPEAL.....	20

Dear Sir:

This brief is in furtherance of the Notice of Appeal, filed in this case on February 8, 2005. This brief contains items under the following headings as required by 37 C.F.R. § 1.192.

- I. Real party in interest.
- II Related appeals and interferences.
- III. Status of claims.
- IV. Status of amendments.
- V. Summary of claimed subject matter.
- VI. Grounds of rejection to be reviewed on appeal.
- VII. Arguments
- VIII. Claims Appendix A

App. B Copies of Cited References

I. REAL PARTY IN INTEREST

The real party in interest for this appeal is: Nexplo Bofors AB

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

A. Current Status of Claims

- 1. Claims canceled: 1-7
- 2. Claims pending: 8-22
- 3. Claims allowed: None
- 4. Claims rejected: 8-22.

B. Claims On Appeal:

The claims on appeal are claims 8-22.

IV. STATUS OF AMENDMENTS

Appellant filed an Amendment dated July 23, 2004 in response to a non-final Official Action dated July 14, 2004. In response to this Amendment, a Final Official Action dated November 16, 2004 was mailed by the Examiner.

A Notice of Appeal was filed on February 8, 2005, with no amendments after final being presented. Accordingly, the claims enclosed herein as Appendix A incorporate the amendments indicated in the paper filed by Appellant on July 23, 2004.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Appellant's invention is directed to gas generating compositions comprising guanidine dinitramide (GDN) and guanyl urea dinitramide (GUD). Page 3, lines 14-34; page 4, line 30 to page 5, line 33. The compositions can also contain a binder. Page 6, lines 1-4. Appellant discovered that of all the many different compounds that can be used as a gas-generating composition, the selection of a specific fuel component, GDN, and a specific oxidizer, GUD, provides a gas-generating composition particularly suited for inflatable safety device (ISDs). Abstract; page 1, lines 6-18; Page 4, line 8 to page 5, line 33. That discovery is embodied in all of the pending claims.¹

Appellant recognizes that these two compounds was known *per se* and could be used as a component in a gas-generating composition, as reflected in the cited references. However, what was not known, or described in the cited references, was the specific use of the two compounds together as a gas-generating composition.

¹ Claims 9 and 10, which depend from claim 8, are directed to compositions in which the GDN is present as the "primary gas-generating component" (claim 9), and the GDN is present in amount "greater than 50% by weight" in the composition (claim 10). Page 9, original claim 5. Appellant separately argues the patentability of claims 9, 10 and 22 in Paragraph E.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

- A. Claims 8-22 stand rejected under 35 U.S.C. § 103 as obvious over the combined teachings of Blomquist (U.S. Pat. No. 6,004,410) and Langlet (WO 98/55428).**

VII. ARGUMENTS

- A. The Cited Art And The Examiner's Rejection.**

This is an appeal from a Final Rejection under 35 U.S.C. § 103 rejecting claims 8-22 as *prima facie* obvious over the cited art. This rejection should be reversed because the Examiner erred in concluding that a person of ordinary skill in the art would be motivated to combine guanidine dinitramide (GDN) and guanyl urea dinitramide (GUD) to form a gas-generating composition with a reasonable expectation of success based on the disclosures of U.S. Pat. No. 6,004,410 to Blomquist, hereafter "Blomquist", and WO 98/55428 to Langlet, hereafter "Langlet". In the appealed Final Official Action, the Examiner relied upon two rationales for the rejection of claims 8-22. Final Official Action, pages 2-3.

First, the Examiner incorrectly asserts that claims 8-14 and 18-19 do not "require any additional ingredient beyond GDN. This is problematic due to the indefinite nature of the claims." *Id.*, page 2. The Appellant respectfully requests that the Examiner withdraw this argument because Appellant cannot possibly define his invention with greater precision than the language presently embodied in claim 8. Claim 8 is directed to a composition comprising GDN and GUD. As a result, the composition defined by claim 8 must include GUD in addition to GDN. Accordingly, Appellant will focus on the Examiner's second rational for the rejection of claims 8-22.

As of Appellant's filing date, GDN and GUD were known *per se* and were used in gas-generating compositions. However, their specific use together in a composition is not

described in the prior art cited by the Examiner, thus, the novelty of the claimed compositions is conceded. Accordingly, the patentability analysis begins from the position that no one ever before combined GDN and GUD into a gas-generating composition with or without a binder for any purpose. Nevertheless, the Examiner contends that a composition containing GDN and GUD is *prima facie* obvious under 35 U.S.C. § 103, for the reasons set forth in the Final Official Action, which are summarized below.

Blomquist describes a gas-generating composition for inflatable safety devices (ISDs) containing guanidine dinitramide (GDN) as a fuel component in combination with an oxidizer. The GDN “when combined with the oxidizer has a burn rate, at least 0.2 in/s at 2000 psi”. Blomquist broadly states that the “oxidizer in the gas generating composition can be any oxygen releasing substance”, and then goes on to list several oxidizers, e.g., the inorganic nitrates and perchlorates, metal oxides and metal complexes and mixtures thereof. Col. 3, lines 63-67. There is no mention of GUD in Blomquist, and not even a hint that one should add GUD to GDN in the hopes of modifying the explosive characteristics of GDN.

Langlet describes the propellant GUD, and the use of GUD in ISDs. “GUD can be used as a propellant alone or as a component in propellant compositions”. Page 2, lines 28-30. However, no generic or specific combinations of secondary components in combination with GUD are described or listed, and no exemplary component compositions are provided in Langlet. Both Blomquist and Langlet are attached hereto in Appendix B.

The Examiner rejects claims 8-22 because Blomquist and Langlet separately describe the use of GDN and GUD, respectively, as a gas-generating compound or as a component in a gas-generating composition. Therefore, “combining the ingredients [GDN and GUD] or compositions to obtain the desired average properties would have been obvious.” Final

Official Action, page 3. “Where the ingredients are well known and combined for their known properties, the combination is obvious, absent unexpected results”, citing *In re Crocket*, 279 F.2d 274, 126 U.S.P.Q. 186 (C.C.P.A. 1960); *In re Pinten*, 459 F.2d 1053, 173 U.S.P.Q. 801 (C.C.P.A. 1972); and *In re Sussman*, 141 F.2d 267, 60 U.S.P.Q. 528 (C.C.P.A. 1944). “Further, it is *prima facie* obvious to combine two compositions, each taught for the same purpose, to yield a third composition for that very purpose,” citing *In re Kerkhoven*, 626 F.2d 846, 850, 205 U.S.P.Q. 1069 (C.C.P.A. 1980). Appellant questions the Examiner’s reliance and expansion of these court decisions for the reasons stated in paragraph C, beginning on page 14.

Appellant submits that the Examiner is using an incorrect standard of obviousness. In particular, the Examiner infers that the claimed subject matter is legally obvious based on the conclusion that it was obvious to try. This standard has never been endorsed by the Federal Circuit. On the contrary, the Federal Circuit precedent on this issue could not be clearer: obvious to try is never an acceptable test of patentability. The Examiner’s rejections should be reversed for this reason alone.

B. The Examiner’s Rejection Is Contrary To The Law Of Obviousness.

Appellant submits that the Examiner has not met her burden of establishing a case of *prima facie* obviousness. The law is clear that: (i) the Examiner bears the burden of establishing a case of *prima facie* obviousness and that obvious to try will not justify an inference of legal obviousness; (ii) the fact that both compounds are *per se* old does not render the claimed combination *prima facie* obvious; the Examiner must demonstrate a motivation to combine coupled with a reasonable expectation of success; and (iii) the

rationale of *In re Geiger* and not *In re Kerkoven* is controlling on the facts of this case. The Examiner's rejection should be reversed under these well-established principles.

(i) The Examiner bears the burden of establishing a case of *prima facie* obviousness.

It is well-settled that the legal concept of *prima facie* obviousness is a procedural tool of examination. It allocates who has the burden of going forward with production of evidence in each step of the examination process. *See In re Rinehart*, 531 F.2d 1048 (C.C.P.A. 1976); *In re Linter*, 458 F.2d 1013 (C.C.P.A. 1972). The Examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness and, if the Examiner does not produce a *prima facie* case, Applicant is under no obligation to submit evidence of nonobviousness. The Examiner must avoid the use of hindsight and the legal conclusion of *prima facie* obviousness must be reached on the basis of the factual suggestions gleaned from the prior art, and not based on the Applicant's disclosure.

The Federal Circuit has clearly articulated what is required to establish a case of *prima facie* obviousness:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on Applicant's disclosure.* (emphasis added)

In re Vaeck, 947 F.2d. 488, 493 (Fed. Cir. 1991).

Appellant submits that the Examiner's rejection is, at best, inappropriately predicated on an "obvious to try" rationale. *In re O'Farrell*, 853 F.2d 894, 7

U.S.P.Q.2d 1683 (Fed. Cir. 1988). In *O'Farrell*, the Court specifically relies upon the classic *Graham v. John Deere Co.*, 383 U.S. 1 (1966), standard for obviousness and discusses at length the inappropriateness of an “obvious to try” rejection. 853 F.2d at 902. The *O'Farrell* Court describes one particular factual setting that can properly be characterized as “obvious to try”:

The admonition that ‘obvious to try’ is not the standard under § 103 has been directed mainly at two kinds of error. In some cases, *what would have been ‘obvious to try’ would have been to vary all parameters or to try each of numerous possible choices until one possibly arrived at a successful result, where the prior art gave either no indication of which parameters were critical or no direction as to which of many possible choices is likely to be successful.* (emphasis added)

Id. at 903 (citations omitted).

The Federal Circuit and its predecessor court have repeatedly and uniformly condemned obvious to try as a test for patentability. *The Gillette Company v. S. C. Johnson & Son, Inc.*, 16 U.S.P.Q.2d 1923, 1928 (Fed. Cir. 1990)(“we have consistently held that “obvious to try” is not to be equated with obviousness under 35 USC 103”); *In re Fine*, 5 U.S.P.Q.2d 1596, 1598-9 (Fed. Cir. 1988) (no *prima facie* obviousness; “obvious to try” is “not a legitimate test of patentability”); *In re Jones*, 21 U.S.P.Q.2d 1941 (Fed. Cir. 1992) (no *prima facie* obviousness even though the prior art generically taught Applicants’ claimed substituted amine salt of dicamba and the specific salt moiety was known for other acids); *Ecolochem, Inc. v. Southern California Edison Co.*, 56 U.S.P.Q.2d 1065, 1075 (Fed. Cir. 2000); *In re Antonie*, 195 U.S.P.Q. 6, 8 (CCPA 1977); *In re Tomlinson*, 363 F.2d 928 (C.C.P.A. 1966)(patentability determinations based upon obvious to try is contrary to the statutory standards under 103).

(ii) The fact that GDN and GUD are per se old is insufficient to establish prima facie obviousness.

The Federal Circuit has repeatedly emphasized that a patent claiming a combination of old elements is subject to the same patentability analysis as any other patent. According to the Federal Circuit, “[t]here is no basis in the law ... for treating combination inventions any different than other inventions.” *Fromson v. Advance Offset Plate, Inc.* 755 F.2d 1549, 1556 (Fed. Cir. 1985) (holding that the combination of three known separate process steps into a single step is nonobvious); *Brentingson Fishing Equipment Co. v. Shimano American Corp.*, 8 U.S.P.Q. 2d 1669, 1672 (Fed. Cir. 1988) (“The focus under section 103 is not whether each element in a claimed invention is old and unpatentable, but whether ‘there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination’.”); *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548-49 (Fed. Cir. 1983) (“[t]here is no [separate statutory] classification entitled ‘combination patents’. Virtually every invention is a combination of elements or process steps.”).

Thus, the Federal Circuit has repeatedly struck down PTO and Board decisions rejecting claims under section 103 where there is no suggestion or motivation in the prior art to combine the teachings of the two or more cited references. This is especially true in the context of combination inventions. In such cases, the court often finds that the PTO and Board improperly asserted a *prima facie* case of obviousness based on the teachings of the Applicant’s own disclosure. *In re Rouffet*, 149 F.3d 1350, 1357 (Fed. Cir. 1998). According to the *Rouffet* Court:

As this court has stated, ‘virtually all inventions are combinations of old elements.’ *** Most, if not all, inventions are combinations and mostly of old elements. Therefore an examiner may often find every element of a claimed invention in the prior art. If identification of each claimed

element in the prior art were sufficient to negate patentability, very few patents would ever issue. Furthermore, rejecting patents solely by finding prior art corollaries for the claimed elements would permit an examiner to use the claimed invention itself as a blueprint for piecing together elements in the prior art to defeat the patentability of the claimed invention. Such an approach would be ‘an illogical and inappropriate process by which to determine patentability’. (citations omitted)

To prevent the use of hindsight based on the invention to defeat patentability of the invention, this court requires the examiner to show a motivation to combine the references that create the case of obviousness. In other words, the examiner must show reasons that the skilled artisan, ... with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed. (emphasis added).

Id. Thus, one skilled in the art must be motivated by some teaching in the references to make the specific combination claimed. *See also In re Dembiczak*, 50 U.S.P.Q. 2d 1614, 1617 (Fed. Cir. 1999)(“the standard established by section 103 requires the oft-difficult but critical step of casting the mind back to the time of invention, to consider the thinking of one of ordinary skill in the art, guided only by the prior art references and the then-accepted wisdom in the field.”).

As stated in *Rouffett*, the law “requires the examiner to show a motivation to combine the references” in the absence of any knowledge of the claimed invention. The references must suggest to a person of ordinary skill to select the elements (in this case, two compounds) from the cited art in the manner claimed. The Examiner’s argument fails this very important test. The Examiner by merely picking two known gas-generating compounds to combine from the hundred or so compounds known absent any suggestion in the art to do so, and based solely on the Appellant’s claimed invention, has without question fallen into the hindsight trap.

The “obvious to try” analysis improperly relied upon by the examiner is based in-part on hindsight. As stated, in *O’Farrell*, the classic case of an “obvious to try” analysis is to “try each of numerous possible choices until one possibly arrived at a successful result, where the prior art gave no indication ... or no direction as to which of many possible choices is likely to be successful.” The examiner has followed this process to reject the Appellant’s claims. Obvious to try is not the proper test or process to evaluate the obviousness of an invention under § 103.

(iii) The rationale of *In re Geiger* and not *In re Kerkoven* is controlling.

Prior to Appellant’s invention, there was no teaching or suggestion in the art to associate GDN with GUD in a gas-generating composition. In *In re Geiger*, 2 U.S.P.Q.2d 1276 (Fed. Cir. 1987), the Court addressed the Board’s rejection of claims to a method of inhibiting scale formation and corrosion of metal using three ingredients each of which had been separately used for this very same purpose. The Court summarized the Board’s argument (rejection) as follows:

Based upon the prior art and the fact that each of the three components of the composition used in the claimed method is conventionally employed in the art for treating cooling water systems, the board held that it would have been *prima facie* obvious, within the meaning of 35 U.S.C. § 103, to employ these components in combination for their known functions and to optimize the amount of each additive.

The Applicant in *Geiger* contended that the “PTO has failed to establish a *prima facie* case of obviousness.” *Id.* at 1278. The Federal Circuit carefully examined the prior art cited and agreed with the Applicant, stating: “At best, in view of these disclosures, one skilled in the art might find it obvious to try various combinations of these known scale and corrosion prevention agents. However, this is not the standard of 35 U.S.C. § 103.” *Id.* Thus, the fact

that each component was previously used in water treatment was not sufficient to establish a use “for the same purpose”. The Examiner is relying on exactly the same argument made by the Board in *Geiger*, which was rejected by the Federal Circuit.

The Examiner’s rejection is based on the view that it was obvious to try GDN in combination with GUD, and that it was possible that the result would provide a gas-generating composition with positive advantages. That is not obvious under § 103(a), and the Court’s guiding precedent in *Graham* and *In re Veack*.

The test for obviousness is not the selection of specific teachings in the art and combine them as did the Appellant, but whether there is some suggestion, teaching or motivation in the art that would have led a person of ordinary skill to select those specific teachings for combination. There can be no case of *prima facie* obviousness if there is no motivation to combine the cited references *and* no reasonable expectation of a successful result for the claimed combination coming from the prior art or the general knowledge of one of ordinary skill. The motivation to combine and reasonable expectation of a success are both requirements of a proper *prima facie* case of obviousness. Appellant submits that the examiner has not met this burden.

The Examiner’s reliance on *In re Kerkoven*, 626 F.2d 846 (C.C.P.A. 1980) is misplaced. In *Kerkhoven*, the claims at issue were directed to methods of making “mixed-active” detergents, that is combining an anionic detergent with a nonionic detergent. The prior art described a method of making a mixed-active detergent in a single unit form, i.e., detergents A and B are intermixed, with a binder. The rejected claims were directed to a mixture of detergents A and B previously prepared in two separate spray dryers, and then physically mixed. *Id.* at 848. The CCPA held that:

It is *prima facie* obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition which is to be used for the very same purpose.

Id. at 850. In other words, a physical mixture of A and B is *prima facie* obvious over a prior association of components A and B plus binder in a unitary form. Those are not the facts at issue in this Appeal.

Prior to Appellant's invention there was no known association of GDN and GUD. On this basis alone, the Examiner's reliance on *Kerkhoven* is misplaced.

Instead, *In re Geiger* is the controlling precedent. *Geiger* dealt with a specific combination of water treatment chemicals, each having a different mode of action. Even though the various scale and corrosion inhibitors at issue in *Geiger* were broadly taught to be useful in treating cooling waters, the Federal Circuit held that insufficient to sustain a finding of *prima facie* obviousness for a novel composition. Likewise, though GDN and GUD are known to be a gas-generating compound, their combination in a gas-generating composition is novel. Moreover, their mechanism of action and their gas-generating properties, e.g., product gases and pressure dependency, are quite different. Because the facts at issue are analogous to the facts in *Geiger*, and the Court having reversed the rejection, the Appellant requests that the Board reverse the Examiner's rejection.

B. The Examiner's Reliance On *Crockett* And *Pinten* Is Misplaced.

The Examiner's reliance upon *Crockett*, *supra* is misplaced. The claims in *Crockett* were directed to a "method for treating gray iron prior to casting". The method included adding fine particles of calcium carbide and magnesium oxide with a carrier gas into the molten iron to provide a casting with uncombined carbon (graphite) in nodular form.

Morrogh II disclosed a similar method of adding magnesium to molten cast iron in the form of briquettes to promote the nodular form of carbon. Morrogh III disclosed injecting calcium in a carrier gas to promote the nodular form of carbon. In summary, the prior art described a method of combining A (molten cast iron) with B (magnesium), or combining A with B' (calcium). In other words, there existed a previously known association of adding B or B' to A to promote nodular carbon. As a result, the court held that adding both B (magnesium) and B' (calcium) to A (molten cast iron) to promote nodular carbon was obvious. Those facts are not at issue in this Appeal.

Prior to Appellant's invention there was no teaching or suggestion in the art to add GDN to a known composition and to add GUD to that same composition. As a result, the Examiner's rejection must be based on hindsight, which the Federal Circuit has repeatedly held to be improper. Absent Appellant's teaching to the art who is to say how GDN and GUD would have reacted in combination. The answer to this question has not been answered by the Examiner's rejection. More importantly, that answer is not provided by the teachings of the cited art. A proper case of *prima facie* obviousness must not only include some motivation in the art to combine, but also a reasonable expectation of a successful result. The Examiner has not pointed to any teaching or suggestion that would predict the successful result of Appellant's claimed compositions. It bears emphasizing that the legal standard is "reasonable expectation of success", and not "wish for success", "hope for success", or "possibility of success".

Furthermore, unlike that of the additives calcium and magnesium in molten cast iron, GDN and GUD are two major components of the Appellant's compositions. They are not being added as mere additives to an already existing composition to provide some secondary

benefit. GDN and GUD are two principle components, and the relative proportions of each dictate the gas-generating properties of the claimed compositions.

Lastly, no other B-type metals are listed in Morrogh II and Morrogh III, respectively. In other words, the entire known selection of B metals that promote nodular carbon in cast iron included only magnesium and calcium. Those facts are not present in the case at issue. Blomquist describes combining GDN with an endless number of known fuel components and oxidizers. The Examiner's rejection fails to recognize Appellant's specific selection of two known gas-generating compounds from the endless number of known gas-generating compounds.

Again, all it says in Blomquist is that GDN can be combined with "any oxygen releasing substance", and then goes on to list several oxidizers, e.g., the inorganic nitrates and perchlorates, metal oxides and metal complexes and mixtures thereof. Col. 3, lines 63-67. There is no mention of the use of GUD, or any other oxidizer in the general class which includes GUD, as an oxidizer in any of the stated combinations.

The Examiner's reliance upon *In re Pinten, supra* is misplaced. In *Pinten*, the court affirmed the rejection of claims 1-15. Claim 1 was directed to a process of making phenolaldehyde foams by using the surfactants ethoxylated castor oil or a mixture of ethoxylated castor oil and ethoxylated nonyl phenol. Mullen described a similar process for making phenolaldehyde foams except for using ethoxylated ricinoleic acid (the glycerides of ricinoleic acid is a major component of castor oil). Hurwitz described making polyurethane foams using ethoxylated castor oil or ethoxylated nonyl phenol. Because of the known similarities between ethoxylated ricinoleic acid and ethoxylated castor oil, the court held that it would have been obvious to "use ethoxylated castor oil ... in place of the related

ethoxylated ricinoleic acid of Mullen.” *Pinten*, 459 F.2d at 1054. As a result, the rejection was based on the simple substitution of one surfactant for another surfactant that is nearly identical in chemical composition and expected properties. Those facts present an entirely different basis of obviousness, not at issue in this Appeal.

There is no suggestion in any of the cited art that the gas-generating properties of GDN are nearly identical to the gas-generating properties of GUD. In fact, the Appellant’s application describes how the two components have quite different gas-generating properties, and it is this difference in properties that characterize the Appellant’s inventive composition. The two claimed components and their respective properties compliment one another.

With the factual background and legal standards outlined above, it is clear that the Examiner’s rejection must be reversed.

D. The Application Includes Experimental Data That Demonstrates Unexpected Properties For The Claimed Compositions.

As noted earlier, the Appellant is under no obligation to submit or refer to data in the application because the Examiner has failed to present a proper case of *prima facie* obviousness. Nevertheless, a careful examination of the burn rate (BR) vs. pressure (P) data reported in Fig. 1 strongly supports the claimed combination. As shown, the burn rate is proportional to pressure according to the formula $BR = KP^n$, where K is a constant (the BR at $P=0$). The exponent n determines how the burn rate is affected by changes in pressure. A relatively high n value indicates that a higher burn rate is achieved for a given increase in pressure (the slope is steeper). Table 1 below lists the K values and n values for the GUD alone, GDN alone and the claimed compositions (the Appellant is not claiming GUD alone or GDN alone) from FIG. 1. However, even before this data is discussed one must recognize

that the data presented was not available to one of skill in the art prior to the Appellant's experiments and publication of his application.

Table 1

wt% GUD	n	K
100	0.72	1.5
80	0.87	1.4
60	0.86	2.0
40	0.77	2.9
20	0.76	3.7
0 (100% GDN)	0.77	4.0

From the data listed in Table 1 one recognizes a relatively linear relationship in the value of K for the compounds alone and in the respective claimed combinations, however, the value of n is not linear. As one moves from 100% GUD to 80% GUD the value of n dramatically increases from 0.72 to 0.87. This is an indication that the burn rate of this mixture is much more sensitive to an increase in pressure than GUD alone. If one then tries a composition with 40% GUD the n value then decreases back to 0.77, and remains relatively constant to 100% GDN. From a practical matter, if one desires a relatively stable gas-generating composition (with respect to an increase in pressure), then one would choose one of the claimed compositions with GDN > GUD, e.g., from 50% to 90% GDN. Alternatively, if one desires a higher burn rate at higher pressures, then one would choose one of the claimed compositions with GUD > GDN, but not 100% GUD. All of these considerations must be taken into account in a proper 103 analysis.

**E. The Examiner Improperly Rejected Claims 9, 10 And 22
As Being *Prima Facie* Obvious Over Blomquist In View Of
Langlet Under 35 U.S.C. §103(A).**

In addition, the Final Official Action gives no patentable weight to the added limitation in claims 9, 10 and 22 that GDN be the primary component in the claimed composition. The Final Official Action simply dismisses this concentration limitation stating that “optimizing a result effective variable is well within the expected ability of a person of ordinary skill in the subject art”. Final Official Action, page 3.

There can be no question that the rejection of claims 9, 10 and 22 is based on impermissible hindsight. Now not only must a person of ordinary skill come up with the selection of two compounds from a listing of many known propellants and oxidizers absent the knowledge provided by Appellant, but, in addition, that same person must decide that GDN be present in greater amounts than GUD. These particular decisions must be made without looking to the Appellant’s application. More importantly, all of these decisions must be made from the teachings and suggestions of Blomquist and Langlet or the general knowledge of one skilled in the art, which are simply not there.

F. Conclusion

The Examiner has used the teachings of Appellant’s application to steer her way through the uncertain waters of the prior art, piece together two references out of a hundred or more references that relate to gas-generating compounds, to reject what Appellant’s have taught the art: that GDN and GUD if used in combination provide certain industrial advantages . This is not the law and the Examiner’s rejection should be reversed.

Accordingly, for the various reasons set forth above, reversal of the unpatentability rejections and allowance of claims 8-22 by the Honorable Board are requested.

VIII. CLAIMS INVOLVED IN THE APPEAL

A copy of the claims involved in the present appeal is attached hereto as Appendix A.
As indicated above, the claims in Appendix A include the amendments filed by Appellant on July 23, 2004.

Date: February 23, 2005

Respectfully submitted,

CONNOLLY BOVE LODGE & HUTZ, LLP



Joseph Barrera, Reg. No. 44,522

CONNOLLY BOVE LODGE & HUTZ LLP

1990 M Street, N.W., Suite 800

Washington, DC 20036-3425

(202) 331-7111

(202) 293-6229 (Fax)

Attorney for Applicant